

1 1. A compound soft jaw to retain a workpiece within a machine vise

2 comprising:

3 a primary jaw member secured to a receiving plate of said machine

4 vice; and

5 a first secondary jaw member secured to said primary jaw member,

6 said first secondary jaw member being machined to have a

7 cutting template formed therein such that as the workpiece is

8 secured within said machine vise, said workpiece is machined

9 according to said template;

10 wherein upon completion of machining of said workpiece, said first

11 secondary jaw member is replaceable by a second secondary

12 jaw member into which a second cutting template is formed.

1 2. The compound soft jaw of claim 1 wherein said second secondary jaw

2 member is the first secondary jaw member removed from said primary jaw

3 member, rotated, and re-secured to said primary jaw member, with a

4 second cutting template formed therein.

1 3. The compound soft jaw of claim 1 further comprising at least one of a first

2 type fastener to secure the primary jaw member to the receiving plate.

1 4. The compound soft jaw of claim 1 wherein two of the first type fasteners

2 secure the primary jaw member to the receiving plate.

1 5. The compound soft jaw of claim 4 wherein the two first type fasteners
2 secure the primary jaw member to the receiving plate with a torque of
3 greater than approximately 250 in./lbs.

1 6. The compound soft jaw of claim 4 wherein the two first type fasteners are
2 $\frac{1}{2}$ "X 13 cap screws.

1 7. The compound soft jaw of claim 1 wherein the primary jaw member is
2 formed of a material selected from the group of materials consisting of
3 aluminum, steel, brass, copper, plastic, wood, and wood products..

1 8. The compound soft jaw of claim 3 wherein the primary jaw member has
2 openings formed therein to accept said fasteners so as to secure said
3 primary jaw member fastener to said receiving plate.

1 9. The compound soft jaw of claim 1 further comprising at least one of a
2 second type fastener to secure the secondary jaw member to the primary
3 jaw member.

1 10. The compound soft jaw of claim 9 wherein three second type fasteners
2 secure the secondary jaw member to the primary jaw member.

1 11. The compound soft jaw of claim 10 wherein the three second type
2 fasteners secure the secondary jaw member to the primary jaw member
3 with a torque of greater than approximately 250 in./lbs.

1 12. The compound soft jaw of claim 10 wherein the three second type
2 fasteners are $\frac{1}{4}$ " X 20 cap screws.

1 13. The compound soft jaw of claim 1 wherein the first and second secondary
2 jaw members are formed of materials selected from the group of materials
3 consisting of aluminum, steel, brass, copper, plastic, wood, and wood
4 products.

1 14. The compound soft jaw of claim 1 wherein the primary jaw member has a
2 height less than a height of the receiving plate and said secondary jaw
3 member is forced into contact with a surface of the receiving plate onto
4 which said primary jaw member is secured, such that said secondary jaw
5 member is supported by the receiving plate and prevent from movement
6 during securing said workpiece within said machine vise.

1 15. A machine vise for securing a workpiece for machining comprising:
2 a vise base joined to a machine tool;
3 a first receiving plate coupled to said vise base;
4 a second receiving plate coupled to said vise base such that the
5 first and second receiving plates are movable adjustable to
6 retain said workpiece;
7 a first compound soft jaw attached to the first receiving plate; and

8 a second compound soft jaw attached to the second receiving plate
9 such that the workpiece is retained between the first and second
10 compound soft jaws for machining by said machine tool;

11 said first and second compound soft jaws each comprising:

12 a primary jaw member secured to one receiving plate of the first
13 and second receiving plates; and

14 a first secondary jaw member secured to said primary jaw
15 member, said first secondary jaw member being machined
16 to have a cutting template formed therein such that as the
17 workpiece is secured within said machine vise, said
18 workpiece is machined according to said template;

19 wherein upon completion of machining of said workpiece, said
20 first secondary jaw member is replaceable by a second
21 secondary jaw member into which a second cutting template
22 is formed.

1 16. The machine vise of claim 15 wherein said second secondary jaw member
2 is the first secondary jaw member removed from said primary jaw
3 member, rotated, and re-secured to said primary jaw member, with a
4 second cutting template formed therein.

1 17. The machine vise of claim 15 further comprising at least one of a first type
2 fastener to secure the primary jaw member to the receiving plate.

1 18. The machine vise of claim 15 wherein two of the first type fasteners
2 secure the primary jaw member to the receiving plate.

1 19. The machine vise of claim 18 wherein the two first type fasteners secure
2 the primary jaw member to the receiving plate with a torque of greater
3 than approximately 250 in./lbs.

1 20. The machine vise of claim 18 wherein the two first type fasteners are $\frac{1}{2}$ "X
2 13 cap screws.

1 21. The machine vise of claim 15 wherein the primary jaw member is formed
2 of a material selected from the group of materials consisting of aluminum,
3 steel, brass, copper, plastic, wood, and wood products.

1 22. The machine vise of claim 17 wherein the primary jaw member has
2 openings formed therein to accept said fasteners so as to secure said
3 primary jaw member fastener to said receiving plate.

1 23. The machine vise of claim 15 further comprising at least one of a second
2 type fastener to secure the secondary jaw member to the primary jaw
3 member.

1 24. The machine vise of claim 23 wherein three second type fasteners secure
2 the secondary jaw member to the primary jaw member.

1 25. The machine vise of claim 24 wherein the three second type fasteners
2 secure the secondary jaw member to the primary jaw member with a
3 torque of greater than approximately 250 in./lbs.

1 26. The machine vise of claim 24 wherein the three second type fasteners are
2 $\frac{1}{4}$ " X 20 cap screws.

1 27. The machine vise of claim 15 wherein the first and second secondary jaw
2 members are formed of materials selected from the group of materials
3 consisting of aluminum, soft steel, brass, copper, plastic, wood, and wood
4 products.

1 28. The machine vise of claim 15 wherein the primary jaw member has a
2 height less than a height of the receiving plate and said secondary jaw
3 member is forced into contact with a surface of the receiving plate onto
4 which said primary jaw member is secured, such that said secondary jaw
5 member is supported by the receiving plate and prevent from movement
6 during securing said workpiece within said machine vise.

1 29. A method for clamping a workpiece to secure said workpiece for
2 machining comprising the steps of:
3 providing and joining a vise base to a machine tool;
4 coupling a first receiving plate to said vise base;

5 coupling a second receiving plate to said vise base such that the
6 first and second receiving plates are movably adjustable with
7 respect to each other to retain said workpiece;
8
9 forming and attaching a first compound soft jaw to the first receiving
10 plate;
11
12 forming and attaching a second compound soft jaw to the second
13 receiving plate; and
14
15 retaining the workpiece between the first and second compound
16 soft jaws for machining by said machine tool;
17
18 said first and second compound soft jaws each formed and
19 attached by the steps of:
20
21 constructing a primary jaw member,
22
23 securing said primary jaw member to a one receiving plate of
24 the first and second receiving plates, and
25
26 constructing a first secondary jaw member,
27
28 securing said first secondary jaw member to said primary
29 jaw member,

22 machining said first secondary jaw member to form a cutting
23 template therein such that upon retaining the workpiece,
24 said workpiece is machined according to said template,

28 machining a second cutting template into said second
29 secondary jaw member for machining of a subsequent
30 workpiece.

30. The method of claim 29 further comprising steps of:

forming the second secondary jaw member by the steps of:

removing the first secondary jaw member from said primary jaw member,

rotating, and

re-securing said first secondary jaw member to said primary jaw member.

1 31. The method of claim 29 wherein securing the primary jaw member to one
2 receiving plate of the first and second receiving plates comprises the steps
3 of:

providing at least one of a first type fastener,

attaching said first fastener type to said primary jaw member, and

securing said primary jaw member to the receiving plate.

1 32. The method of claim 31 wherein two of the first type fasteners secure the
2 primary jaw member to the receiving plate.

1 33. The method of claim 32 wherein the two first type fasteners secure the
2 primary jaw member to the receiving plate with a torque of greater than
3 approximately 250 in./lbs.

1 34. The method of claim 32 wherein the two first type fasteners are $\frac{1}{2}$ "X 13
2 cap screws.

1 35. The method of claim 29 wherein the primary jaw member is formed of a
2 material selected from the group of materials consisting of aluminum, soft
3 steel, brass, copper, plastic, wood, and wood products.

1 36. The method of claim 31 further comprising the steps of:

forming openings in said primary jaw member to accept said

fasteners so as to secure said primary jaw member fastener to said receiving plate.

1 37. The method of claim 29 wherein securing the secondary jaw member to
2 the primary jaw member comprises the steps of

providing at least one of a second type fastener,

attaching said second fastener type to said secondary jaw member.

and

securing the secondary jaw member to the primary jaw member.

1 38. The method of claim 37 wherein three second type fasteners secure the
2 secondary jaw member to the primary jaw member.

1 39. The method of claim 38 wherein the three second type fasteners secure
2 the secondary jaw member to the primary jaw member with a torque of
3 greater than approximately 250 in./lbs.

1 40. The method of claim 38 wherein the three second type fasteners are $\frac{1}{4}$ " X
2 20 cap screws.

1 41. The method of claim 29 wherein the first and second secondary jaw
2 members are formed of materials selected from the group of materials
3 consisting of aluminum, soft steel, brass, copper, plastic, wood, and wood
4 products.

1 42. The method of claim 29 wherein forming the primary jaw member
2 comprising the step of:

3 constructing said primary jaw member to a height less than a height
4 of the receiving plate;

5 and wherein securing said secondary jaw member further
6 comprises the step of forcing said secondary jaw member into
7 contact with a surface of the receiving plate onto which said
8 primary jaw member is secured, such that said secondary jaw
9 member is supported by the receiving plate and prevent from
10 movement during securing said workpiece within said machine
11 vise.

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